## SEQUENCE LISTING

<110> Usha KASID Deepak KUMAR Irman AHMAD
<120> GENE SCC-112 AND DIAGNOSTIC AND THERAPEUTIC USES THEREOF
<130> 224378
<150> PCT/US02/10850 <151> 2002-04-08
<150> 60/281,780 <151> 2001-04-06
<160> 3
<170> PatentIn Ver. 3.2
<210> 1 <211> 6744 <212> DNA <213> Homo sapiens
<220> <221> CDS <222> (232)(4122)
<400> 1 ggacetegea ggeeaagaat teggeaegag gggegeegge teeeggggea eggaeggeeg 60
ggcgcgcgcc tctgcgaggg gcgtccgggt ccgagtcggc ggtccgggcc ggcgcgaggt 120
gcgtgcgggc gggccgcggg ggtcccggac ggacacaagc gcacacactc ccggaagatc 180
gcttaccctc cgggggtaaa agagatcacc gacaagatca ccacggacga g atg atc 237 Met Ile 1
aaa cgc ctg aag atg gta gtg aaa acc ttt atg gat atg gat cag gac 285 Lys Arg Leu Lys Met Val Val Lys Thr Phe Met Asp Met Asp Gln Asp 5 10 15
tca gaa gat gaa aaa cag cag tat ctc cca cta gcc ttg cat ctt gca 333 Ser Glu Asp Glu Lys Gln Gln Tyr Leu Pro Leu Ala Leu His Leu Ala 20 25 30
tct gaa ttc ttc ctc agg aac ccc aat aaa gat gtg cgt ctc ctt gta 381 Ser Glu Phe Phe Leu Arg Asn Pro Asn Lys Asp Val Arg Leu Leu Val 35 40 45 50
gca tgt tgt ttg gct gat atc ttt cgt atc tat gcc cca gaa gct cca 429 Ala Cys Cys Leu Ala Asp Ile Phe Arg Ile Tyr Ala Pro Glu Ala Pro 55 60 65
tat act tcc cat gat aaa ctt aag gac ata ttt ttg ttt att acc aga 477 Tyr Thr Ser His Asp Lys Leu Lys Asp Ile Phe Leu Phe Ile Thr Arg 70 75 80
caa tta aaa ggt ttg gag gat aca aag agt cca cag ttt aat aga tac 525 Gln Leu Lys Gly Leu Glu Asp Thr Lys Ser Pro Gln Phe Asn Arg Tyr 85 90 95
ttt tat tta tta gag aat tta gct tgg gtt aaa tca tat aac atc tgc 573 Phe Tyr Leu Leu Glu Asn Leu Ala Trp Val Lys Ser Tyr Asn Ile Cys

ttt gaa ttg gaa gat tgc aat gaa att ttt att cag ctt ttt aga act 621 Phe Glu Leu Glu Asp Cys Asn Glu Ile Phe Ile Gln Leu Phe Arg Thr 115 125 ctc ttc tca gtg atc aac aat agc cac aat aag aag gta caa atg cac 669 Leu Phe Ser Val Ile Asn Asn Ser His Asn Lys Lys Val Gln Met His 135 140 atg cta gat ttg atg agt tct atc atg gaa ggt gat gga gtt act 717 Met Leu Asp Leu Met Ser Ser Ile Ile Met Glu Gly Asp Gly Val Thr 150 155 765 caa gaa tta ttg ggc tcc att ctt att aac ctc att cct gca cat aag Gln Glu Leu Leu Gly Ser Ile Leu Ile Asn Leu Ile Pro Ala His Lys 170 175 165 aac tta aat aaa cag tcc ttt gac ctt gca aaa gtg cta ttg aaa aga 813 Asn Leu Asn Lys Gln Ser Phe Asp Leu Ala Lys Val Leu Leu Lys Arg 185 190 aca gtc cag act att gag gca tgc att gcc aat ttt ttc aat caa gtc 861 Thr Val Gln Thr Ile Glu Ala Cys Ile Ala Asn Phe Phe Asn Gln Val 200 205 210 ctg gtg ctg gga aga tca tca gta agt gat ttg tca gaa cat gta ttt 909 Leu Val Leu Gly Arg Ser Ser Val Ser Asp Leu Ser Glu His Val Phe 215 gat ctg att cag gaa ctt ttt gct ata gat cct cat tta tta tcc 957 Asp Leu Ile Gln Glu Leu Phe Ala Ile Asp Pro His Leu Leu Ser . 230 235 240 gtc atg cca cag ctt gaa ttc aaa cta aag agc aat gat gga gaa gag 1005 Val Met Pro Gln Leu Glu Phe Lys Leu Lys Ser Asn Asp Gly Glu Glu cga tta gct gtt gtt cga ctt cta gct aaa ttg ttt ggc tcc aaa gat Arg Leu Ala Val Val Arg Leu Leu Ala Lys Leu Phe Gly Ser Lys Asp 260 265 tet gat ttg gea aca eag aat egt eet ett tgg eaa tgt ttt ett gga Ser Asp Leu Ala Thr Gln Asn Arg Pro Leu Trp Gln Cys Phe Leu Gly 280 2.85 290 cga ttt aat gat att cat gtt cct gtg aga tta gaa agt gtg aaa ttt 1149 Arg Phe Asn Asp Ile His Val Pro Val Arg Leu Glu Ser Val Lys Phe gcc agt cat tgt tta atg aat cac cca gat tta gcg aag gat ctc aca 1197 Ala Ser His Cys Leu Met Asn His Pro Asp Leu Ala Lys Asp Leu Thr 310 320 gaa tat tta aag gtt aga tca cat gat cca gaa gaa gct att cgt cat 1245 Glu Tyr Leu Lys Val Arg Ser His Asp Pro Glu Glu Ala Ile Arg His gat gtc att gtt act ata ata aca gct gcc aag agg gac ctg gcc tta 1293

Asp Val Ile Val Thr Ile Ile Thr Ala Ala Lys Arg Asp Leu Ala Leu 340 qta aat gat cag ctg ctt ggc ttt gta agg gaa aga aca ctg gat aaa 1341 Val Asn Asp Gln Leu Leu Gly Phe Val Arg Glu Arg Thr Leu Asp Lys 355 365 370 cgg tgg cga gta aga aaa gaa gct atg atg ggt ctg gct cag ctt tat 1389 Arg Trp Arg Val Arg Lys Glu Ala Met Met Gly Leu Ala Gln Leu Tyr aag aaa tac tgt ctt cat ggt gaa gca gga aag gaa gct gca gag aaa 1437 Lys Lys Tyr Cys Leu His Gly Glu Ala Gly Lys Glu Ala Ala Glu Lys 390 395 gtc agc tgg ata aag gac aaa ctt ctg cat att tat tat cag aac agc 1485 Val Ser Trp Ile Lys Asp Lys Leu Leu His Ile Tyr Tyr Gln Asn Ser 405 410 415 att gac gac aaa ctg ttg gta gag aaa atc ttt gct cag tat ctt gtc Ile Asp Asp Lys Leu Leu Val Glu Lys Ile Phe Ala Gln Tyr Leu Val 420 ccc cac aac ctg gaa aca gaa gag aga atg aaa tgc tta tat tac tta 1581 Pro His Asn Leu Glu Thr Glu Glu Arg Met Lys Cys Leu Tyr Tyr Leu 435 tat gct agt ttg gat cca aat gct gta aaa gct ctc aac gaa atg tgg 1629 Tyr Ala Ser Leu Asp Pro Asn Ala Val Lys Ala Leu Asn Glu Met Trp 455 460 aag tgt cag aac atg ctt cgg agc cat gta cgc gaa cta ttg gat ttg 1677 Lys Cys Gln Asn Met Leu Arg Ser His Val Arg Glu Leu Leu Asp Leu 470 cac aag cag cct aca tca gag gct aac tgt tct gcc atg ttt gga aaa His Lys Gln Pro Thr Ser Glu Ala Asn Cys Ser Ala Met Phe Gly Lys 490 485 495 ctg atg acc ata gca aag aat ttg cct gac ccc ggg aaa gca caa gat 1773 Leu Met Thr Ile Ala Lys Asn Leu Pro Asp Pro Gly Lys Ala Gln Asp 505 510 500 ttt gtg aag aaa ttt aac cag gtt ctc ggc gat gat gag aaa ctt cgg 1821 Phe Val Lys Lys Phe Asn Gln Val Leu Gly Asp Asp Glu Lys Leu Arg 515 tct cag ttg gag tta tta att agc cca acc tgt tct tgc aaa caa gca Ser Gln Leu Glu Leu Leu Ile Ser Pro Thr Cys Ser Cys Lys Gln Ala 535 gat att tgt gtg aga gaa ata gcc cgg aaa ctt gca aat cct aag caa 1917 Asp Ile Cys Val Arg Glu Ile Ala Arg Lys Leu Ala Asn Pro Lys Gln

550 555 560

cca aca aat cct ttt cta gag atg gtc aaa ttt ctg ttg gaa aga atc 1965 Pro Thr Asn Pro Phe Leu Glu Met Val Lys Phe Leu Leu Glu Arg Ile 565 gca cct gtg cac att gat tca gaa gcc ata agt gca cta gtg aaa ttg 2013 Ala Pro Val His Ile Asp Ser Glu Ala Ile Ser Ala Leu Val Lys Leu 585 atg aat aag tca ata gag ggg aca gca gat gat gaa gag gag ggt gta 2061 Met Asn Lys Ser Ile Glu Gly Thr Ala Asp Asp Glu Glu Glu Gly Val 600 605 610 agt cca gat aca gct atc cgt tca gga ctt gaa ctt ctt aag gtt ctg Ser Pro Asp Thr Ala Ile Arg Ser Gly Leu Glu Leu Leu Lys Val Leu tot ttt aca cat cot acc tcg ttc cac tct gca gag aca tat gag tcc . Ser Phe Thr His Pro Thr Ser Phe His Ser Ala Glu Thr Tyr Glu Ser 635 630 ttg tta cag tgc cta aga atg gag gat gac aag gta gca gaa gct gct 2205 Leu Leu Gln Cys Leu Arg Met Glu Asp Asp Lys Val Ala Glu Ala Ala 645 650 att caa att ttt aga aat aca ggt cac aaa ata gaa aca gac ctt ccc 2253 Ile Gln Ile Phe Arg Asn Thr Gly His Lys Ile Glu Thr Asp Leu Pro cag ata cga tcg acc tta att ccc att tta cat caa aaa gca aag agg 2301 Gln Ile Arg Ser Thr Leu Ile Pro Ile Leu His Gln Lys Ala Lys Arg 675 680 685 690 ggt act cca cac caa gca aaa cag gct gtg cac tgt ata cac gcc ata 2349 Gly Thr Pro His Gln Ala Lys Gln Ala Val His Cys Ile His Ala Ile 695 ttc aca aat aaa gaa gtc cag ctt gca cag att ttt gag cca ctc agt 2397 Phe Thr Asn Lys Glu Val Gln Leu Ala Gln Ile Phe Glu Pro Leu Ser 710 agg agt ctg aat gct gat gtg cca gaa caa ctt ata act cca tta gtt 2445 Arg Ser Leu Asn Ala Asp Val Pro Glu Gln Leu Ile Thr Pro Leu Val 725 730 tca ttg ggc cac att tct atg tta gca cca gat cag ttt gct tcc cca 2493 Ser Leu Gly His Ile Ser Met Leu Ala Pro Asp Gln Phe Ala Ser Pro atg aaa tot gta gta gca aat ttt att gtg aaa gat otg ota atg aat 2541 Met Lys Ser Val Val Ala Asn Phe Ile Val Lys Asp Leu Leu Met Asn 760 765 770 755

gac agg tca aca ggt gaa aag aat gga aaa ctg tgg tct cca gat gaa 2589 Asp Arg Ser Thr Gly Glu Lys Asn Gly Lys Leu Trp Ser Pro Asp Glu gag gtt tcc cct gaa gta cta gca aag gta cag gca att aaa ctt ctg 2637 Glu Val Ser Pro Glu Val Leu Ala Lys Val Gln Ala Ile Lys Leu Leu gta agg tgg ctg ttg ggt atg aaa aac aac cag tct aaa tct gcc aat 2685 Val Arg Trp Leu Leu Gly Met Lys Asn Asn Gln Ser Lys Ser Ala Asn tca acc ctt cgg tta tta tca gcg atg ttg gtt agt gag ggt gac ctg 2733 Ser Thr Leu Arg Leu Leu Ser Ala Met Leu Val Ser Glu Gly Asp Leu 820 825 aca gag caa aag agg atc agt aaa tct gat atg tct cgc ttg cga tta 2781 Thr Glu Gln Lys Arg Ile Ser Lys Ser Asp Met Ser Arg Leu Arg Leu 835 850 gct gct ggt agt gcc ata atg aag ctt gct cag gaa cct tgt tac cat Ala Ala Gly Ser Ala Ile Met Lys Leu Ala Gln Glu Pro Cys Tyr His 855 gaa att att acc cca gaa cag ttt cag ctc tgt gca ctt gtt att aat 2877 Glu Ile Ile Thr Pro Glu Gln Phe Gln Leu Cys Ala Leu Val Ile Asn 870 875 880 gat gag tgt tac caa gta agg cag ata ttt gct cag aag ctg cat aag 2925 Asp Glu Cys Tyr Gln Val Arg Gln Ile Phe Ala Gln Lys Leu His Lys gca ctt gtg aag tta ctg ctc cca ttg gag tat atg gcg atc ttt gcc 2973 Ala Leu Val Lys Leu Leu Pro Leu Glu Tyr Met Ala Ile Phe Ala 900 ttg tgt gcc aaa gat cct gtg aag gag aga aga gca cac gca cga caa 3021 Leu Cys Ala Lys Asp Pro Val Lys Glu Arg Arg Ala His Ala Arg Gln 915 920 925 930 tgt tta ctg aaa aat atc agt ata cgc agg gaa tac att aag cag aat Cys Leu Leu Lys Asn Ile Ser Ile Arg Arg Glu Tyr Ile Lys Gln Asn cct atg gct act gag aaa tta tta tca ctg ttg cct gaa tat gta gtt 3117 Pro Met Ala Thr Glu Lys Leu Leu Ser Leu Leu Pro Glu Tyr Val Val 950 955 960 cca tac atg att cac ctg cta gcc cat gat cca gat ttt aca aga tca Pro Tyr Met Ile His Leu Leu Ala His Asp Pro Asp Phe Thr Arg Ser 970

caa gat gtt gat cag ctt cgt gat atc aaa gag tgc cta tgg ttc atg Gln Asp Val Asp Gln Leu Arg Asp Ile Lys Glu Cys Leu Trp Phe Met ctt gaa gtt tta atg aca aag aat gaa aac aat agc cat gcc ttt atg Leu Glu Val Leu Met Thr Lys Asn Glu Asn Asn Ser His Ala Phe Met aag aag atg gca gag aac atc aag tta acc aga gat gcc cag tct cca Lys Lys Met Ala Glu Asn Ile Lys Leu Thr Arg Asp Ala Gln Ser Pro gat gaa too aag aca aat gaa aaa otg tat aca gta tgt gat gtg got Asp Glu Ser Lys Thr Asn Glu Lys Leu Tyr Thr Val Cys Asp Val Ala ctc tgt gtt ata aat agt aaa agt gct ttg tgc aat gca gat tca cca Leu Cys Val Ile Asn Ser Lys Ser Ala Leu Cys Asn Ala Asp Ser Pro aag gac cca gtc ctc cca atg aaa ttt ttt aca caa cct gaa aag gac Lys Asp Pro Val Leu Pro Met Lys Phe Phe Thr Gln Pro Glu Lys Asp ttc tgt aac gat aag agt tat att tca gaa gag aca aga gta ctt ctg Phe Cys Asn Asp Lys Ser Tyr Ile Ser Glu Glu Thr Arg Val Leu Leu tta aca gga aag cca aag cct gct gga gta cta ggt gca gta aat aag Leu Thr Gly Lys Pro Lys Pro Ala Gly Val Leu Gly Ala Val Asn Lys cct tta tca qca acq qqa aqq aaa ccc tat qtt aqa aqc act qqc act Pro Leu Ser Ala Thr Gly Arg Lys Pro Tyr Val Arg Ser Thr Gly Thr gag act gga agc aat att aat gta aat tca gag ctg aac cct tca acc Glu Thr Gly Ser Asn Ile Asn Val Asn Ser Glu Leu Asn Pro Ser Thr gga aat cga tca agg gaa cag agt tca gag gca gca gaa act gga gtt Gly Asn Arg Ser Arg Glu Gln Ser Ser Glu Ala Ala Glu Thr Gly Val agt gaa aat gaa gag aac cct gtg agg att att tca gtc aca cct gta Ser Glu Asn Glu Glu Asn Pro Val Arg Ile Ile Ser Val Thr Pro Val aag aat att gac cca gta aag aat aag gaa att aat tct gat cag gct Lys Asn Ile Asp Pro Val Lys Asn Lys Glu Ile Asn Ser Asp Gln Ala acc cag ggc aac atc agc agt gac cga gga aag aaa aga aca gta aca

3837

Thr Gln Gly Asn Ile Ser Ser Asp Arg Gly Lys Lys Arg Thr Val Thr 1190 1195 1200

gca gct ggt gca gag aat atc caa caa aaa aca gat gag aaa gta gat 3885

Ala Ala Gly Ala Glu Asn Ile Gln Gln Lys Thr Asp Glu Lys Val Asp 1205 1210 1215

gaa tog gga oot ooc goo oot too aaa ooc agg aga gga ogt oga ooc 3933

Glu Ser Gly Pro Pro Ala Pro Ser Lys Pro Arg Arg Gly Arg Arg Pro 1220 1225 1230

aag tot gaa tot cag ggc aat gct acc aaa aat gat gat cta aat aaa 3981

Lys Ser Glu Ser Gln Gly Asn Ala Thr Lys Asn Asp Asp Leu Asn Lys 1235 1240 1245 1250

cct att aac aag gga agg aag aga gct gca gtg ggt cag gag agc cct 4029

Pro Ile Asn Lys Gly Arg Lys Arg Ala Ala Val Gly Gln Glu Ser Pro 1255 1260 1265

ggg ggt ttg gaa gca ggt aat gcc aaa gca ccc aaa ctg caa gat tta 4077

Gly Gly Leu Glu Ala Gly Asn Ala Lys Ala Pro Lys Leu Gln Asp Leu 1270 1275 1280

gcc aaa aag gca gca cca gca gaa aga caa att gac tta caa agg 4122

Ala Lys Lys Ala Ala Pro Ala Glu Arg Gln Ile Asp Leu Gln Arg 1285 1290 1295

taaaaatgca tttgcaaagg gagaaaatga aggccaaaca gaagcaggct ccagcttctg 4182

caaaaacttg gattcacaaa tgtccctgaa cagaaaatga agctcacttc agaacacaca 4242

ctctctgcct tgaaaactaa agagactatt acttcctttt cacatgacca caagtcctct 4302

gatggaaatg tacagcagaa actcttgaga gagaggctaa aagcaactct gttctcccc 4362

ttcccctaga cttttcttac gaaaagtcaa taattaagca aattgcttaa cacttggttc 4422

cagtteetge ctatetggag tttaaatgeg taatacacca ttaattteea egetgeagtt 4482

tttattttaa agaaagtaac aagatgtett tacaetgaca etgaaaatte ateeatttta 4542

gagccaggaa ttcccatgtt acacaggaaa aaatagaagt ctactgaatt aattttttaa 4602

aagaaaagag atcagattaa atatttcttt gtttttcctt ttggaaactt ttatgtataa 4662

ttctttctgc ctgcctactt ttctgcaaaa atgagatgta cagatttcgg ttccctgcta 4722

tgaaaagtga tgtggtagca attttataaa tgttgctttc tgatttttat cagagtgaga 4782

aaattaaaat tattgatttg caagtagtaa acagttcata ttttgatttc ccctcatttt 4842 agtttaatat aatttgcaat aaatgtacat attgttgttt gtttcataaa gcatatcact 4902 ttaaaatggt ttttactcct gtgattatgt tggaatattt ggaattttaa aggagtaaag 4962 actgtccagc atttggtttt ataatgtttg tcaccagatt tttattaatg taaaaaatca 5022 atttttaaaa aatagttgga ctttggcagc ttttaaggaa agttggaggt gttttaggat tgctatcaat tttcagcatt gtgctatttg gaaataagtg ttttgctttt gtctgatggt 5142 ctgggctcat ttttatgttt attttagaaa actgttgcat caatatatta tgtttcttgg 5202 cattgttcag cataggtaat gtgtgcactt tatgtgtaca cataatcata tttaagtttt ttgcataaaa taaatgcttc tagatgtcat ggcagtcttt ttaatctttt tatcatatgc 5322 tttcttgtga attttttcat gttaaagagc taaagtcata acatgattac agtcaactct ccattatcta tataaaatag tgactaagcc tcaggttttt aattttgtga taacaaaata 5442 acgaaggcat gtaagacctg attctggagg aacatgaaat ttgtcttttc tcatgtccag agttctatcc tgcccccact gtccactgta gggtcatccg caaagcccta gcagaatgtg 5562 ctcactccat ttccttacac gtttctagca tgggtcagag gaaacaacat ttgtgttata 5622 acttcgtctt gataggctgt agtgtacatg ggatgtaaaa caaacaagtg tatcaaaggt ggatgattct gttagagtga agtttgagag taaatgtcac ttacgtttct catagatgat caagagttgg ctgtgtattg actgaaagat gggtaattat tttaaatatg catttacaca catttaggta tcagaagatg cttagggaac aatggatacc aatgatagaa aatgatacct 5862 ttacaggggc agaaaaatcc ccactcttcc ttattgcctc ttcagaaccc tttagaaagt ataaaatatt gcctccaaca tgctgaaaaa gagtatctat gcataagtat cagagaagtc 5982 cctcaaqcaa tcaqtaqqtq tqttctattt aqaqaqaqtt taaaqttctc ttaqcatcaq 6042 acaacttgat tectaaggtt tecagtgtgt caecaacaaa aagtgeattg atagggaeet 6102

ttgtctcttc ctccctttga ttaattgccc ggcatcacag tttactagat taccaagtgt 6162 tacatcatat taaataaaat gtagcagaac catctgcatc aatatattcc tgtttagatt tttgcaggag agaagttaaa aggatttgct ccttgtatga tgtaagtggc ccaccccaat tttgtaacat gatgcaagtg tctggcacta agggaagcaa gagtagggtt gtggaaagac caagctgatg gggagggact tgtttacggg aattttttta gttttccttt tcaaaggaaa acattaaaat cccttaggaa tttggtattc acatctcaga gaactacaac acaaaagtgc 6462 agacttatat ttgagaatta atgttaaccc tttgtgtcta gtttgaagct tcttgtattt gtctaaaaca acaagccaga attttgtatc tcctttgata aaaagtgtgt ataatgtaaa gtagttttgc atattcttgt gctgcacatg ggctgaattt ttaaaattttt tttaaaaact 6642 tgaagcagaa ccttgtaatt tgtgtaaatg acaagtgtaa aatcctacca taaaatgcta aaaatatgca ctgtttcaaa taaaaccaag aaatgcagca tt 6744 <210> 2 <211> 1297 <212> PRT <213> Homo sapiens <400> 2 Met Ile Lys Arg Leu Lys Met Val Val Lys Thr Phe Met Asp Met Asp Gln Asp Ser Glu Asp Glu Lys Gln Gln Tyr Leu Pro Leu Ala Leu His Leu Ala Ser Glu Phe Phe Leu Arg Asn Pro Asn Lys Asp Val Arg Leu Leu Val Ala Cys Cys Leu Ala Asp Ile Phe Arg Ile Tyr Ala Pro Glu Ala Pro Tyr Thr Ser His Asp Lys Leu Lys Asp Ile Phe Leu Phe Ile Thr Arg Gln Leu Lys Gly Leu Glu Asp Thr Lys Ser Pro Gln Phe Asn Arg Tyr Phe Tyr Leu Leu Glu Asn Leu Ala Trp Val Lys Ser Tyr Asn Ile Cys Phe Glu Leu Glu Asp Cys Asn Glu Ile Phe Ile Gln Leu Phe Arg Thr Leu Phe Ser Val Ile Asn Asn Ser His Asn Lys Lys Val Gln

Met His Met Leu Asp Leu Met Ser Ser Ile Ile Met Glu Gly Asp Gly 150 155 Val Thr Gln Glu Leu Leu Gly Ser Ile Leu Ile Asn Leu Ile Pro Ala His Lys Asn Leu Asn Lys Gln Ser Phe Asp Leu Ala Lys Val Leu Leu Lys Arg Thr Val Gln Thr Ile Glu Ala Cys Ile Ala Asn Phe Phe Asn 200 Gln Val Leu Val Leu Gly Arg Ser Ser Val Ser Asp Leu Ser Glu His 215 220 Val Phe Asp Leu Ile Gln Glu Leu Phe Ala Ile Asp Pro His Leu Leu 230 Leu Ser Val Met Pro Gln Leu Glu Phe Lys Leu Lys Ser Asn Asp Gly 245 Glu Glu Arg Leu Ala Val Val Arg Leu Leu Ala Lys Leu Phe Gly Ser Lys Asp Ser Asp Leu Ala Thr Gln Asn Arg Pro Leu Trp Gln Cys Phe Leu Gly Arg Phe Asn Asp Ile His Val Pro Val Arg Leu Glu Ser Val 295 Lys Phe Ala Ser His Cys Leu Met Asn His Pro Asp Leu Ala Lys Asp 310 315 Leu Thr Glu Tyr Leu Lys Val Arg Ser His Asp Pro Glu Glu Ala Ile Arg His Asp Val Ile Val Thr Ile Ile Thr Ala Ala Lys Arg Asp Leu Ala Leu Val Asn Asp Gln Leu Leu Gly Phe Val Arg Glu Arg Thr Leu Asp Lys Arg Trp Arg Val Arg Lys Glu Ala Met Met Gly Leu Ala Gln Leu Tyr Lys Lys Tyr Cys Leu His Gly Glu Ala Gly Lys Glu Ala Ala 390 Glu Lys Val Ser Trp Ile Lys Asp Lys Leu Leu His Ile Tyr Tyr Gln Asn Ser Ile Asp Asp Lys Leu Leu Val Glu Lys Ile Phe Ala Gln Tyr 425 Leu Val Pro His Asn Leu Glu Thr Glu Glu Arg Met Lys Cys Leu Tyr 440 Tyr Leu Tyr Ala Ser Leu Asp Pro Asn Ala Val Lys Ala Leu Asn Glu Met Trp Lys Cys Gln Asn Met Leu Arg Ser His Val Arg Glu Leu Leu 470 Asp Leu His Lys Gln Pro Thr Ser Glu Ala Asn Cys Ser Ala Met Phe

Gly Lys Leu Met Thr Ile Ala Lys Asn Leu Pro Asp Pro Gly Lys Ala 505 Gln Asp Phe Val Lys Lys Phe Asn Gln Val Leu Gly Asp Asp Glu Lys 520 Leu Arg Ser Gln Leu Glu Leu Leu Ile Ser Pro Thr Cys Ser Cys Lys Gln Ala Asp Ile Cys Val Arg Glu Ile Ala Arg Lys Leu Ala Asn Pro Lys Gln Pro Thr Asn Pro Phe Leu Glu Met Val Lys Phe Leu Leu Glu 565 570 Arg Ile Ala Pro Val His Ile Asp Ser Glu Ala Ile Ser Ala Leu Val Lys Leu Met Asn Lys Ser Ile Glu Gly Thr Ala Asp Asp Glu Glu Glu Gly Val Ser Pro Asp Thr Ala Ile Arg Ser Gly Leu Glu Leu Leu Lys 615 Val Leu Ser Phe Thr His Pro Thr Ser Phe His Ser Ala Glu Thr Tyr Glu Ser Leu Leu Gln Cys Leu Arg Met Glu Asp Asp Lys Val Ala Glu Ala Ala Ile Gln Ile Phe Arg Asn Thr Gly His Lys Ile Glu Thr Asp 665 Leu Pro Gln Ile Arg Ser Thr Leu Ile Pro Ile Leu His Gln Lys Ala Lys Arg Gly Thr Pro His Gln Ala Lys Gln Ala Val His Cys Ile His Ala Ile Phe Thr Asn Lys Glu Val Gln Leu Ala Gln Ile Phe Glu Pro Leu Ser Arg Ser Leu Asn Ala Asp Val Pro Glu Gln Leu Ile Thr Pro Leu Val Ser Leu Gly His Ile Ser Met Leu Ala Pro Asp Gln Phe Ala 745 Ser Pro Met Lys Ser Val Val Ala Asn Phe Ile Val Lys Asp Leu Leu Met Asn Asp Arg Ser Thr Gly Glu Lys Asn Gly Lys Leu Trp Ser Pro Asp Glu Glu Val Ser Pro Glu Val Leu Ala Lys Val Gln Ala Ile Lys Leu Leu Val Arg Trp Leu Leu Gly Met Lys Asn Asn Gln Ser Lys Ser 810 Ala Asn Ser Thr Leu Arg Leu Leu Ser Ala Met Leu Val Ser Glu Gly Asp Leu Thr Glu Gln Lys Arg Ile Ser Lys Ser Asp Met Ser Arg Leu

- Arg Leu Ala Ala Gly Ser Ala Ile Met Lys Leu Ala Gln Glu Pro Cys 850 . 855 860
- Tyr His Glu Ile Ile Thr Pro Glu Gln Phe Gln Leu Cys Ala Leu Val 865 870 875 880
- Ile Asn Asp Glu Cys Tyr Gln Val Arg Gln Ile Phe Ala Gln Lys Leu 885 . 890 895
- His Lys Ala Leu Val Lys Leu Leu Pro Leu Glu Tyr Met Ala Ile 900 905 910
- Phe Ala Leu Cys Ala Lys Asp Pro Val Lys Glu Arg Arg Ala His Ala : 915 920 925
- Arg Gln Cys Leu Leu Lys Asn Ile Ser Ile Arg Arg Glu Tyr Ile Lys 930 935 940
- Gln Asn Pro Met Ala Thr Glu Lys Leu Leu Ser Leu Leu Pro Glu Tyr 945 950 955 960
- Val Val Pro Tyr Met Ile His Leu Leu Ala His Asp Pro Asp Phe Thr 965 970 975
- Arg Ser Gln Asp Val Asp Gln Leu Arg Asp Ile Lys Glu Cys Leu Trp . 980 985 990
- Phe Met Leu Glu Val Leu Met Thr Lys Asn Glu Asn Asn Ser His Ala 995 1000 1005
- Phe Met Lys Lys Met Ala Glu Asn Ile Lys Leu Thr Arg Asp Ala Glu  $\cdot$  1010 1020
- Ser Pro Asp Glu Ser Lys Thr Asn Glu Lys Leu Tyr Thr Val Cys Asp 1025 1030 1035 1040
- Val Ala Leu Cys Val Ile Asn Ser Lys Ser Ala Leu Cys Asn Ala Asp 1045 1050 1055
- Ser Pro Lys Asp Pro Val Leu Pro Met Lys Phe Phe Thr Gln Pro Glu 1060 1065 1070
- Lys Asp Phe Cys Asn Asp Lys Ser Tyr Ile Ser Glu Glu Thr Arg Val 1075 1080 1085
- Leu Leu Thr Gly Lys Pro Lys Pro Ala Gly Val Leu Gly Ala Val 1090 1095 1100
- Asn Lys Pro Leu Ser Ala Thr Gly Arg Lys Pro Tyr Val Arg Ser Thr 1105 1110 1115 1120
- Gly Thr Glu Thr Gly Ser Asn Ile Asn Val Asn Ser Glu Leu Asn Pro 1125 1130 1135
- Ser Thr Gly Asn Arg Ser Arg Glu Gln Ser Ser Glu Ala Ala Glu Thr 1140 1145 1150 `
- Gly Val Ser Glu Asn Glu Glu Asn Pro Val Arg Ile Ile Ser Val Thr 1155 1160 1165
- Pro Val Lys Asn Ile Asp Pro Val Lys Asn Lys Glu Ile Asn Ser Asp 1170 1175 1180
- Gln Ala Thr Gln Gly Asn Ile Ser Ser Asp Arg Gly Lys Lys Arg Thr

1185 1190 1195 1200

Val Thr Ala Ala Gly Ala Glu Asn Ile Gln Gln Lys Thr Asp Glu Lys 1205 1210 1215

Val Asp Glu Ser Gly Pro Pro Ala Pro Ser Lys Pro Arg Arg Gly Arg 1220 1225 1230

Arg Pro Lys Ser Glu Ser Gln Gly Asn Ala Thr Lys Asn Asp Asp Leu 1235 1240 1245

Asn Lys Pro Ile Asn Lys Gly Arg Lys Arg Ala Ala Val Gly Gln Glu 1250 1260

Ser Pro Gly Gly Leu Glu Ala Gly Asn Ala Lys Ala Pro Lys Leu Gln 1265 1270 1275 1280

Asp Leu Ala Lys Lys Ala Ala Pro Ala Glu Arg Gln Ile Asp Leu Gln 1285 1290 1295

Arg

<210> 3

<211> 20

<212> PRT

<213> Artificial

<400> 3

Lys Leu Gln Asp Leu Ala Lys Lys Ala Ala Pro Ala Glu Arg Gln Ile 1 5 10 15

Asp Leu Gln Arg 20